

PROBLEM SUMMARY

Sample Rating Trend

ISO

Cranes [450159533]

Crane - Aft - Hoisting Winch (S/N Sample Tag MA-04001-S5)

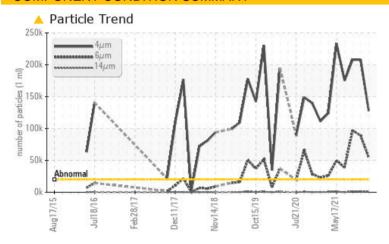
Component Winch

PETRO CANADA GEARLUBE TOS 80W90 (8 LTR)





COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS Sample Status **ATTENTION ATTENTION ABNORMAL** <u></u> 1032 Particles >14µm ASTM D7647 >640 **1042 1550** Oil Cleanliness ISO 4406 (c) >21/19/16 **424/23/17 25/24/18**

Customer Id: TERHAM Sample No.: PC0052194 Lab Number: 02568336 Test Package: MAR 2

To manage this report scan the QR code

To discuss the diagnosis or test data: Kevin Marson +1 (289)291-4644 x4644 Kevin.Marson@wearcheck.com

To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter			?	We recommend you service the filters on this component.

HISTORICAL DIAGNOSIS

29 Nov 2021 Diag: Kevin Marson





We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



20 Sep 2021 Diag: Kevin Marson





We recommend you service the filters on this component. We recommend an early resample to monitor this condition. All component wear rates are normal. Particles $>14\mu m$ are abnormally high. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

01 Aug 2021 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend

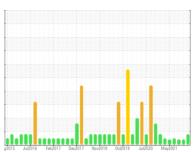
ISO

Cranes [450159533]

Crane - Aft - Hoisting Winch (S/N Sample Tag MA-04001-S5)

Winch

PETRO CANADA GEARLUBE TOS 80W90 (8 LTR)





DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a light amount of silt (particulates < 14 microns in size) present in the oil.

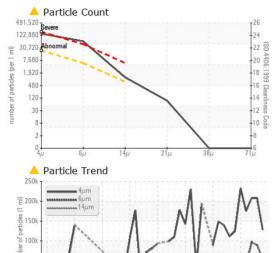
Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

(8 LTR)						
SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		PC0052194	PC0039829	PC0040146
Sample Date		Client Info		14 Jun 2023	29 Nov 2021	20 Sep 2021
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ATTENTION	ATTENTION	ABNORMAL
WEAR METAL	S	method	limit/base	current	history 1	history 2
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>30	6	12	9
Chromium	ppm	ASTM D5185(m)	>2	0	0	0
Nickel	ppm	ASTM D5185(m)	>2	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	>2	<1	0	0
Silver	ppm	ASTM D5185(m)	>2	<1	<1	<1
Aluminum	ppm	ASTM D5185(m)	>5	<1	7	7
Lead	ppm	ASTM D5185(m)	>70	0	<1	<1
Copper	ppm	ASTM D5185(m)	>65	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>9	0	0	0
Antimony	ppm	ASTM D5185(m)	>5	0	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		<1	0	0
ADDITIVES		and the section of			1111	hiotom, O
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185(m)	240	current 199	157	174
	ppm		240			
Boron		ASTM D5185(m)	240	199	157	174
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	240	199 0	157 0	174 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	240 1 0.0	199 0 0	157 0 0	174 0 0
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	240 1 0.0	199 0 0 <1	157 0 0 <1	174 0 0 <-1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	240 1 0.0	199 0 0 -<1 2	157 0 0 <1 <1	174 0 0 0 <1 2
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6	199 0 0 <1 2 4	157 0 0 <1 <1 10	174 0 0 0 <1 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6 1000	199 0 0 <1 2 4 1020	157 0 0 <1 <1 10 915	174 0 0 0 <1 2 13 945
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3	199 0 0 <1 2 4 1020 20	157 0 0 <1 <1 10 915 80	174 0 0 0 <1 2 13 945
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3	199 0 0 <1 2 4 1020 20 18958	157 0 0 <1 <1 10 915 80 17837	174 0 0 <1 2 13 945 81 18650
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400	199 0 0 <1 2 4 1020 20 18958 <1	157 0 0 <1 <1 10 915 80 17837 <1	174 0 0 <1 2 13 945 81 18650
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400	199 0 0 <1 2 4 1020 20 18958 <1	157 0 0 <1 <1 10 915 80 17837 <1 history 1	174 0 0 0 <1 2 13 945 81 18650 <1 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm	ASTM D5185(m) method ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400	199 0 0 <1 2 4 1020 20 18958 <1 current	157 0 0 <1 <1 10 915 80 17837 <1 history 1	174 0 0 0 <1 2 13 945 81 18650 <1 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400 limit/base	199 0 0 0 2 4 1020 20 18958 1 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	157 0 0 0 <1 <1 10 915 80 17837 <1 history 1 5 2	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400 limit/base >30	199 0 0 <1 2 4 1020 20 18958 <1 current 4 1 <1	157 0 0 0 <1 <1 10 915 80 17837 <1 history 1 5 2 8	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI	ppm	ASTM D5185(m) method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400 limit/base >30 >20 limit/base	199 0 0 1 2 4 1020 20 18958 <1 current 4 1 <1 current	157 0 0 <1 <1 10 915 80 17837 <1 history 1 5 2 8	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm	ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400 limit/base >30 limit/base >200 limit/base	199 0 0 0 <1 2 4 1020 20 18958 <1 current 4 1 <1 current 127861	157 0 0 <1 <1 10 915 80 17837 <1 history 1 5 2 8 history 1	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1 history 2 207948
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm	ASTM D5185(m)	240 1 0.0 2 6 1000 3 19400 limit/base >30 >20 limit/base >20000 >5000 >640	199 0 0 1 2 4 1020 20 18958 <1 current 4 1 <1 current 127861 54810	157 0 0 0 <1 <1 <1 10 915 80 17837 <1 history 1 5 2 8 history 1 207919 89180	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1 history 2 207948 96644
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7647 ASTM D7647	240 1 0.0 2 6 1000 3 19400 limit/base >30 >20 limit/base >20000 >5000 >640	199 0 0 1 2 4 1020 20 18958 <1 current 4 1 <1 current 127861 54810 ▲ 1042	157 0 0 0 <1 <1 <1 10 915 80 17837 <1 history 1 5 2 8 history 1 207919 89180 1032	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1 history 2 207948 96644 1550
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm	ppm	ASTM D5185(m) MASTM D5185(m) MASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	240 1 0.0 2 6 1000 3 19400 limit/base >30 >20 limit/base >20000 >5000 >640 >160	199 0 0 0 <1 2 4 1020 20 18958 <1 current 4 1 <1 current 127861 54810 ▲ 1042 79	157 0 0 <1 <1 10 915 80 17837 <1 history 1 5 2 8 history 1 207919 89180 ▲ 1032 106	174 0 0 0 <1 2 13 945 81 18650 <1 history 2 6 2 <1 history 2 207948 96644 ▲ 1550 167



OIL ANALYSIS REPORT

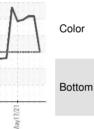


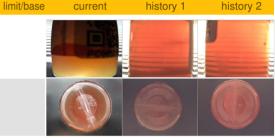
FLUID DEGRAI	NOITAC	method	limit/base	current	history 1	history 2
Acid Number (AN)	mg KOH/g	ASTM D974*	1.5	1.54	2.58	2.58
VISUAL		method	limit/base	current	history 1	history 2
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	NONE	NONE
Silt	scalar	Visual*	NONE	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	NONE	NONE	VLITE
Sand/Dirt	scalar	Visual*	NONE	NONE	VLITE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPE	RTIFS	method	limit/base	current	history 1	history 2

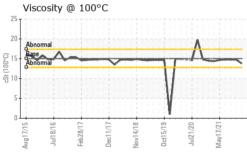
Acid	l Num	ber						
							1	7
S 2.0 - Base			A					1
Acid Number (mg KOH/g)	<u> </u>	~	ソレ	~~		<u>~</u>	,	
2000								
O.O. Aug17/15	Jul18/16 -	Feb28/17	Dec11/17 -	Nov14/18	Oct15/19	Jul21/20 -	May17/21	

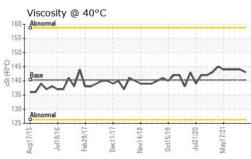
FLUID PROPE	RHES	method	limit/base	current	history 1	history 2
Visc @ 40°C	cSt	ASTM D7279(m)	140.3	143	144	144
Visc @ 100°C	cSt	ASTM D7279(m)	15.05	13.8	14.8	14.8
Viscosity Index (VI)	Scale	ASTM D2270*	109	91	102	102

method











CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number

: PC0052194 : 02568336 : 5605382

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

SAMPLE IMAGES

Received Diagnosed

: 06 Jul 2023 : 07 Jul 2023

Diagnostician : Kevin Marson Test Package : MAR 2 (Additional Tests: KV100, PQ, PrtCount, TAN Man, VI)

To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

Suncor - Terra Nova Projects Scotia Centre, 235 Water Strret St. John's, NL

> CA A1C 1B6 Contact: Josh Hynes joshynes@suncor.com T: (709)778-3575

F: (709)724-2835